

## 2. Understanding Iowa

How will Iowa be different in 2040?

What are some of the key changes we will have to face?

How will future economic development opportunities be addressed?

How will Iowa's transportation system be impacted?

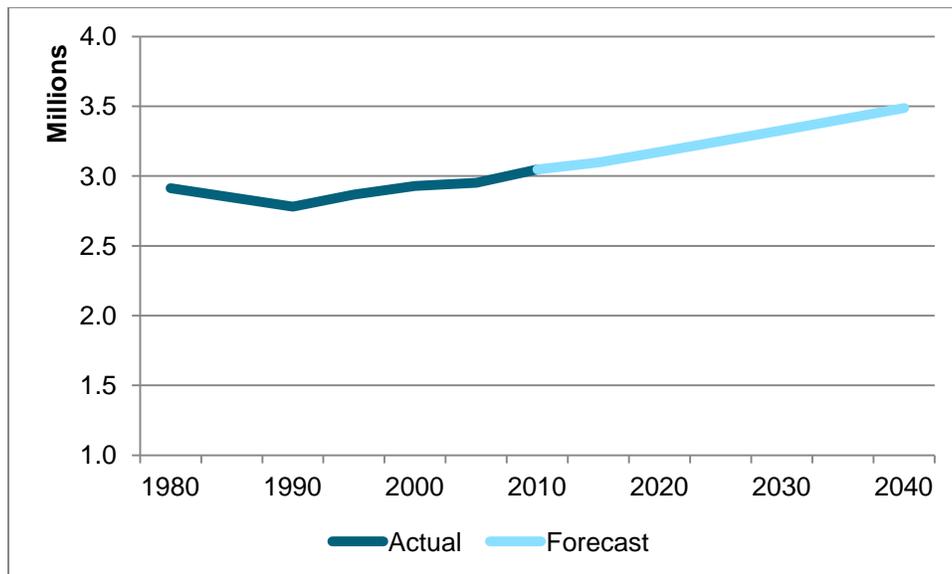
To answer these types of questions, we must have an understanding of where we have been and where we currently are. This chapter looks at many of the key trends that have impacted Iowa in the past, how they are affecting us today, and how they are projected to affect us in the future. An understanding of the characteristics that make Iowa unique will help us in facing our future and planning ahead to meet these challenges.

### 2.1 Demographic trends

#### Iowa's population is growing at a slow pace.

Iowa's population has remained relatively stable since 1980, growing 4.55 percent over the past 30 years. It is projected that Iowa's population will increase from 3.04 million in 2010 to approximately 3.49 million in 2040.

**Figure 2.1:** Iowa Population, 1980-2040



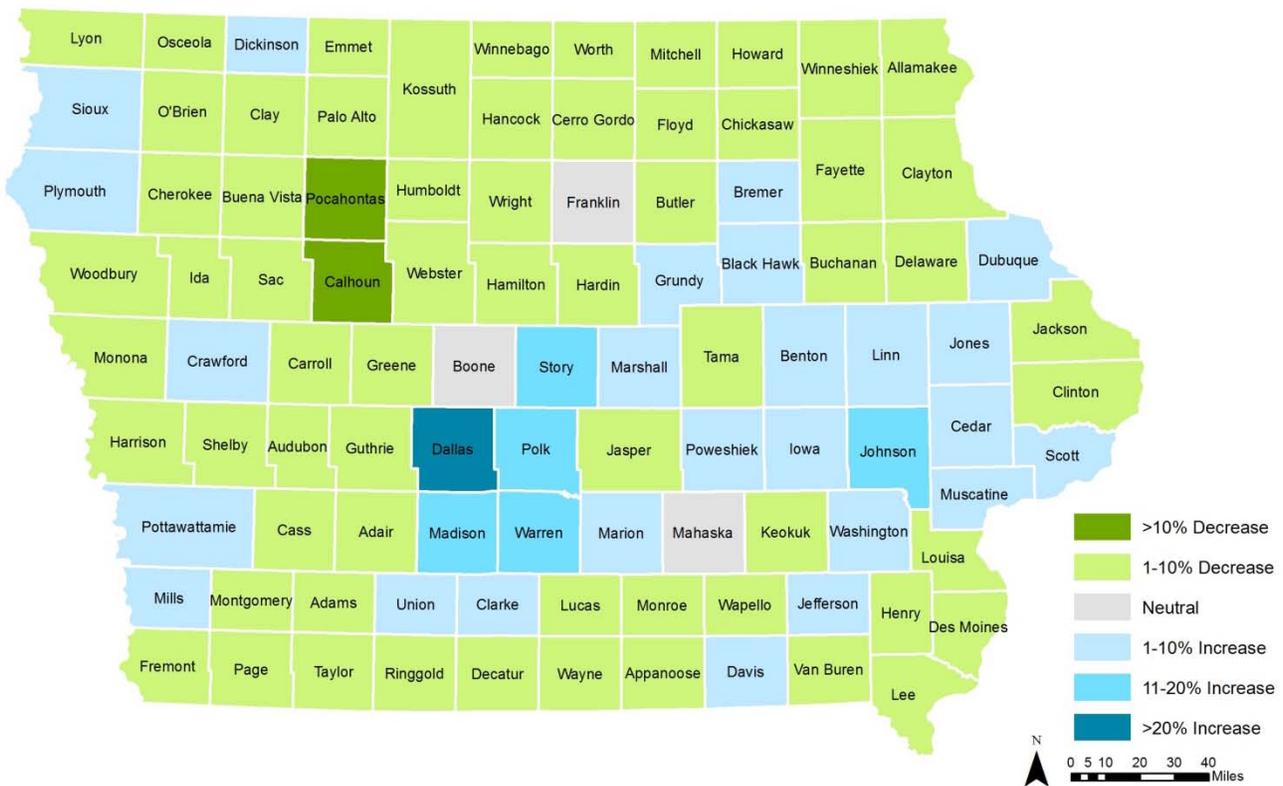
Sources: U.S. Census Bureau, Woods and Poole Economics, Inc.

Iowa’s population growth from 2000 to 2010 was slower than the national growth rate, but was fairly consistent with the Midwest region (the Census Bureau defines this region as the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin). According to the 2010 Census, Iowa’s population grew 4.1 percent from 2000 to 2010, compared to 3.9 percent in the Midwest region and 9.7 percent nationally.

**Iowa’s population growth is not uniform throughout the state.**

Areas of population growth and decline are scattered around the state. Between 2000 and 2010, 31 of Iowa’s 99 counties grew in population, three remained virtually unchanged, and 65 counties declined in population. While there was growth in various locations across Iowa, the majority of population increases took place within or near metropolitan areas. **Figure 2.2** illustrates the 2000 to 2010 population change distributed across Iowa’s 99 counties.

**Figure 2.2: County Population Change, 2000-2010**



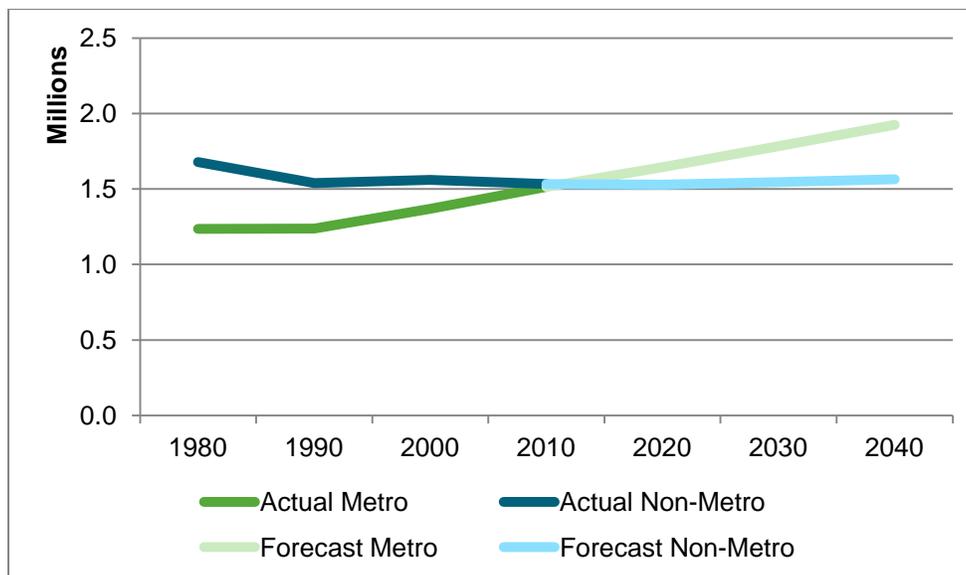
Source: U.S. Census Bureau

### Iowa's population is urbanizing.

As mentioned previously, Iowa's population is continuing to migrate toward the state's nine metropolitan areas, which have an urban core of at least 50,000 people. Historically, the majority of Iowa's population has resided in non-metropolitan areas, yet most of the population growth in recent decades has been in counties that contain or are adjacent to metropolitan areas. Assuming that this trend continues, Iowa's metropolitan population is expected to account for nearly 60 percent of the state's total population by 2040. **Figure 2.3** charts this trend since 1980, and forecasts the expected gap between metropolitan and non-metropolitan population levels in 2040.

Although Iowa's population as a whole is growing at a slow pace, the shift in population from rural to urban communities in recent years has impacts on the transportation system. Increased population in metropolitan areas can create congestion and capacity issues, while local jurisdictions with decreasing population can be faced with less funding for deteriorating roadways.

**Figure 2.3: Metropolitan and Non-Metropolitan Population, 1980-2040**



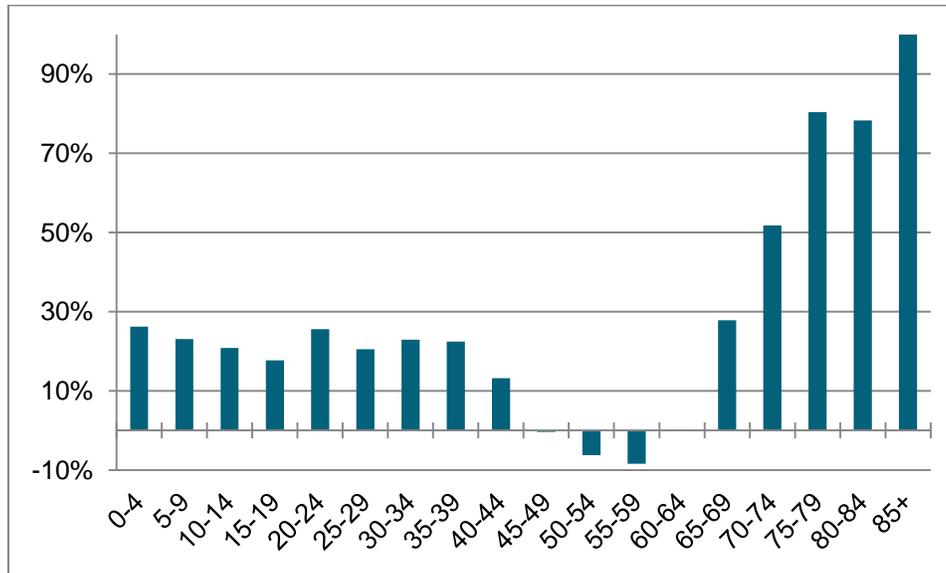
Sources: U.S. Census Bureau, Woods and Poole Economics, Inc.

### Iowa's population is getting older.

Iowa's median age has increased from 30 years in 1980 to 38 years in 2010, and the percentage of Iowa's population over the age of 65 was 14.9 – the fifth-highest in the United States. This number is expected to continue to grow as the “baby boom” generation reaches this milestone in the coming years. **Figure 2.4** shows the projected percent change in five-year age groups between 2010 and 2040. As illustrated in the chart, the highest growth is expected to be among those aged 65 and older.

Relatively stable population growth is expected in the 44-and-under age groups, while the percentage of 45 to 59-year-olds is expected to decline slightly between 2010 and 2040.

**Figure 2.4:** Projected Percent Change in Population Age Groups, 2010-2040



Sources: U.S. Census Bureau, REMI Economic Models, Inc.

Iowa's older population has specific transportation needs that differ from other age groups. Improving the roadway and driving environment and expanding transportation options are necessary to help meet the needs of older drivers. Some examples of ways to enhance roadway safety and transportation for older drivers include:

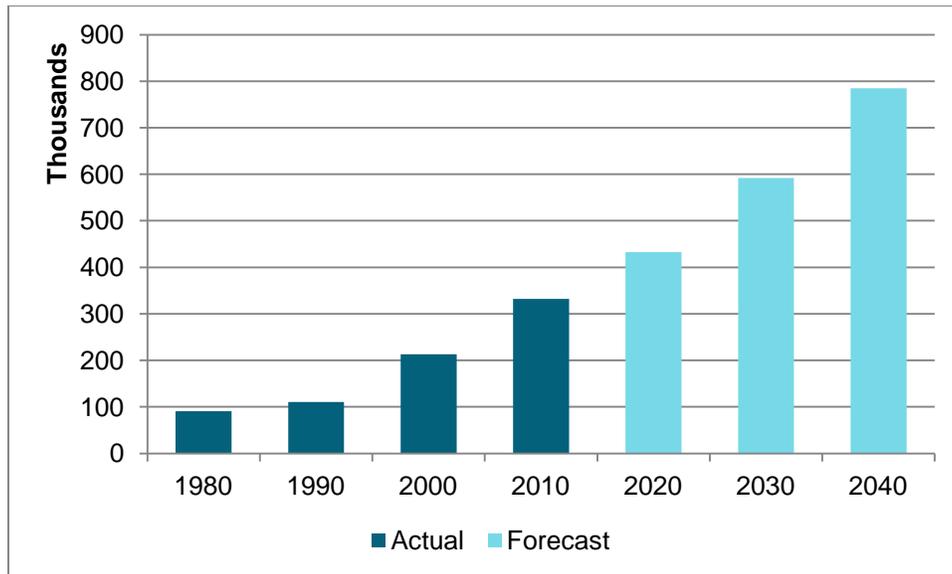
- Larger print on signs
- Safer turning movements at intersections
- More visible pavement markings
- Better roadway lighting
- Well-connected pedestrian facilities
- Improved transit options and coordination between transit providers and human service agencies

### Iowa's minority population continues to grow.

Iowa's racial and ethnic minority population has more than tripled over the last 30 years. Minorities accounted for 11 percent of Iowa's 2010 population, compared to three percent in 1980. By 2040, racial and ethnic minorities in Iowa are projected to account for almost 21 percent of the state's total

population. The Hispanic or Latino population is the fastest-growing minority in Iowa, and has nearly doubled in the past decade. [Figure 2.5](#) shows the actual and forecasted minority population in Iowa from 1980 to 2040.

**Figure 2.5: Minorities in Iowa, 1990-2040**



Sources: U.S. Census Bureau, REMI Economic Models, Inc.

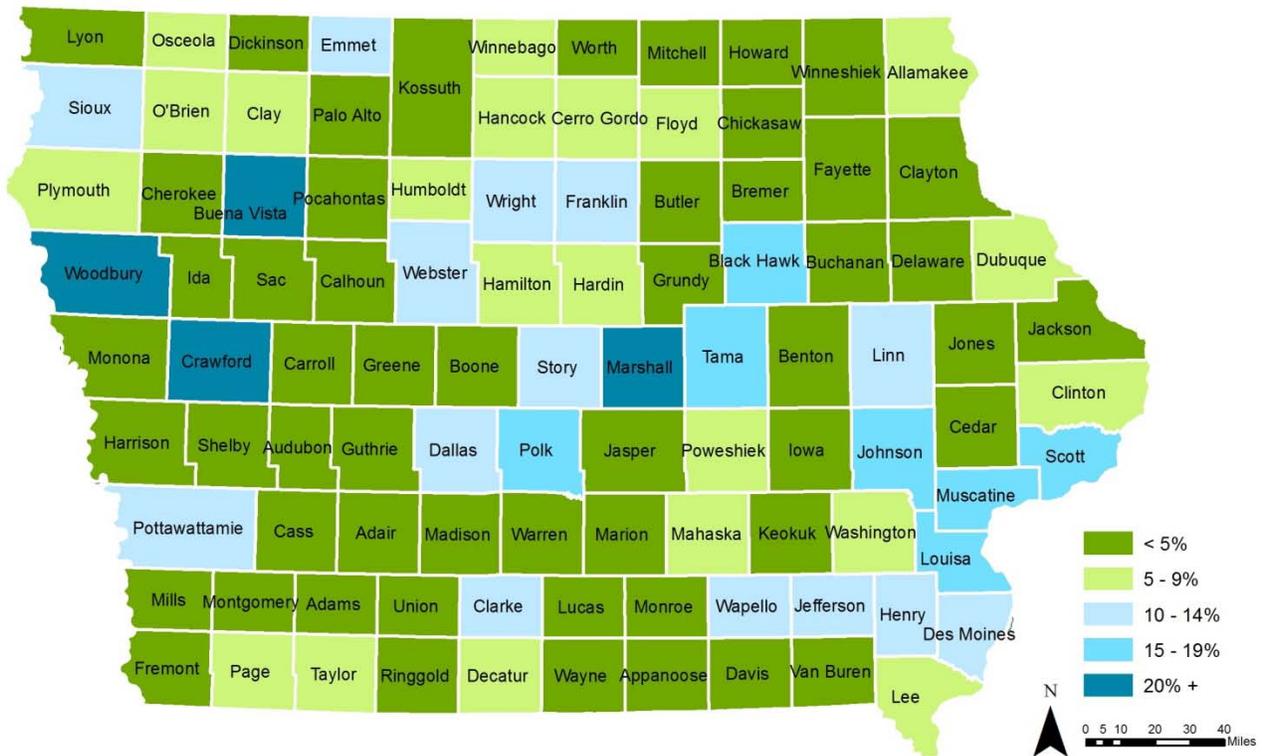
While most of the minority population in Iowa resides in the state’s most populated counties, some of the areas with the highest percent minority population are located in counties outside metropolitan areas (see [Figure 2.6](#)). In urban areas, these populations can be drawn to a wider variety of economic, cultural, and educational offerings; in rural counties, minorities often find work in agriculture, construction, food production, and manufacturing.

It is important to understand the transportation needs of the minority population in Iowa. Most minority groups in Iowa have a lower median household income than non-minority, and these populations are often more inclined to take a mode other than a personal automobile to work. The 2006-2010 American Community Survey 5-Year Estimates found that of all (minority and non-minority) populations in Iowa, Asian workers were most likely to take public transportation to work (8%), and Hispanic and Latino workers were most likely to carpool (23%).

As Iowa’s minority population increases, so will the need to accommodate persons with limited English proficiency (LEP) on the state’s transportation system. While only 2.9% of the state’s population “speaks English less than ‘very well’” – the U.S. Census’ threshold for defining LEP – this percentage is

likely to grow. The language most often spoken in Iowa other than English is Spanish, and this can be expected to increase as the Hispanic population is projected to grow faster than any other population group over the next 30 years. It’s important that Iowa’s LEP population is accommodated on Iowa’s multi-modal transportation system in ways such as translating maps and transit schedules, and by offering interpretation services at public meetings.

**Figure 2.6: Percent Minority Population by County, 2010**



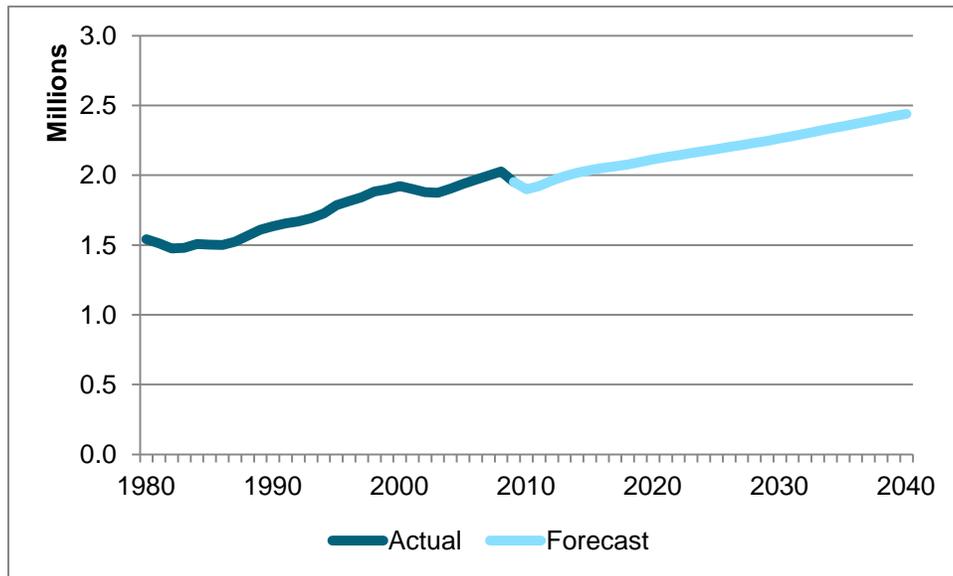
Source: U.S. Census Bureau

## 2.2 Economic trends

### Total employment in Iowa is expected to increase slowly.

In the past 30 years, total employment in Iowa has slowly increased, growing about 27 percent from 1980 to 2009. Iowa’s employment is expected to continue this growth by increasing another 28 percent by 2040. **Figure 2.7** charts the actual and projected total employment in Iowa from 1980-2040.

Figure 2.7: Iowa Employment, 1980-2040



Sources: U.S. Bureau of Economic Analysis, REMI Economic Models, Inc.

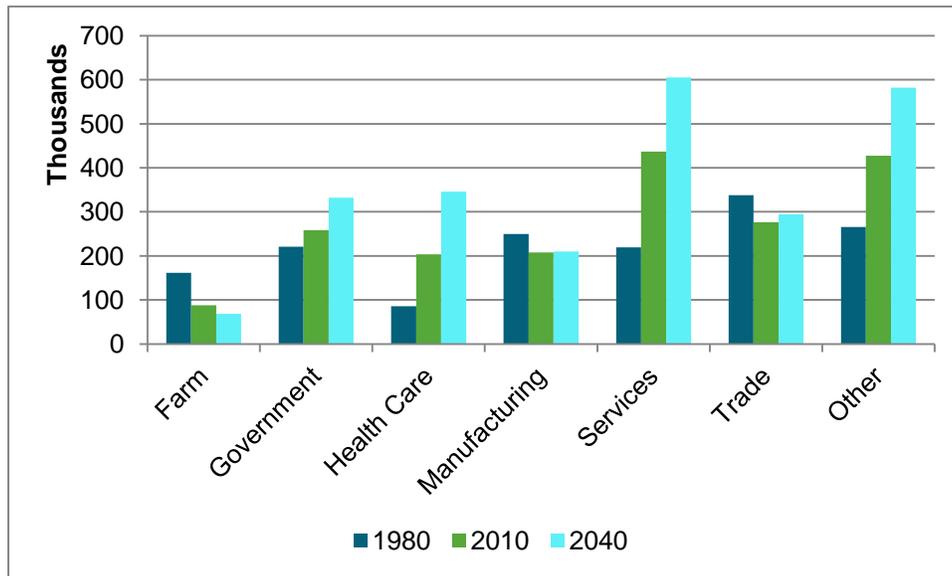
### Iowa's traditional employment sectors have changed.

Traditionally, farming and manufacturing have been two of the primary employment sectors in Iowa. Technological advancements and economic diversification have changed this in recent years. Since 1980, the farm sector has lost about 73,000 jobs, which represents a decline of nearly 45 percent in total farm employment in Iowa. This trend is projected to continue, with this sector losing an additional 19,800 jobs through 2040. There has also been a significant decrease in manufacturing employment since 1980 with about 41,700, or 17 percent, fewer jobs than there were 30 years ago. As for the future, manufacturing jobs in Iowa are expected to remain nearly flat, growing an estimated one percent over the next 30 years.

The largest employment gain from 1980 to 2010 was in the health care and social assistance sector, which grew 138 percent, or nearly 118,000 jobs. The second-largest gain was in the services sector, growing by 99 percent, or about 217,000 jobs, between 1980 and 2010.

Through 2040, the number of farm jobs is projected to continue to decrease, manufacturing jobs will remain relatively stable, and jobs in other areas—such as health care and services—are forecasted to increase.

Figure 2.8: Iowa Employment by Sector, 1980-2040

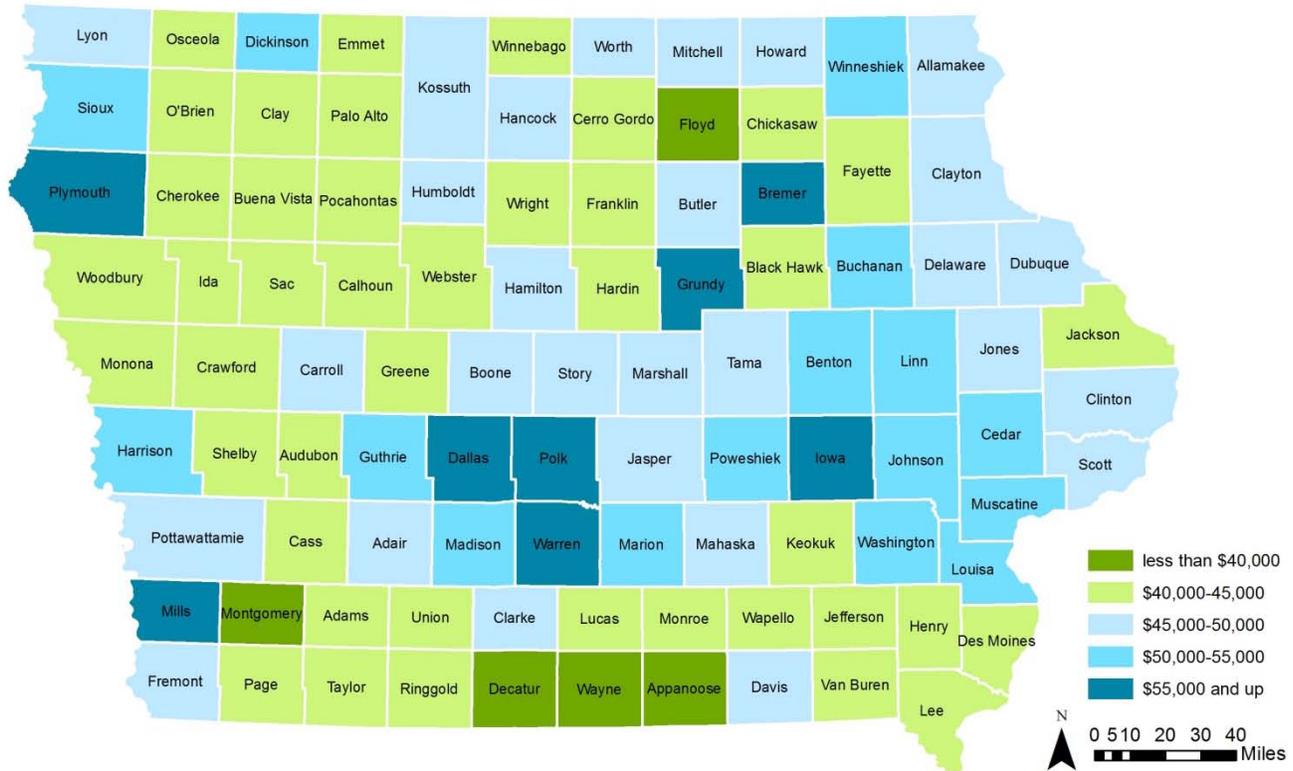


Sources: U.S. Bureau of Economic Analysis, REMI Economic Models, Inc.

**Iowa’s per capita personal income is increasing but remains below the national average.**

Per capita personal income – which includes total wages and salaries, transfer payments, dividends, interest, and rental income; divided by the total population – is used as a measure of the wealth of an area’s population as well as an indicator of the economic health of that region. Iowa’s per capita personal income has grown nine percent from 2000 to 2010, compared to four percent in the United States. While Iowa’s per capita personal income is currently 94 percent of the national average, this reflects an improvement from 2000, when Iowans earned 90 percent of the national average. This trend is expected to slowly continue, and by 2040, Iowa’s per capita personal income is projected to be 98 percent of the United States average.

Among Iowa’s households, the median income in 2010 was \$48,872. In general, the counties with the highest median household income are typically in or within close proximity to the state’s metropolitan areas. Figure 2.9 shows the 2010 estimated median household income distributed across Iowa’s 99 counties.

**Figure 2.9:** Median Household Income by County, 2010

Source: U.S. Census Bureau, 2006-2010 American Community Survey 5-Year Estimates

### Iowa is an affordable place to live.

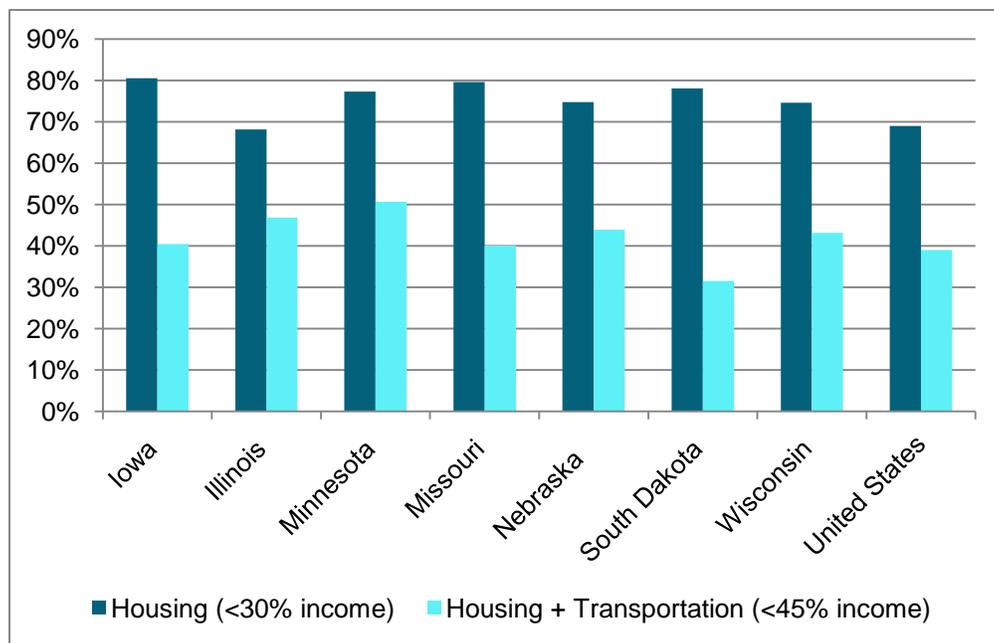
Housing and transportation in Iowa remain affordable when compared to the surrounding region as well as the nation. According to the Center for Neighborhood Technology's (CNT) Housing +Transportation Affordability Index, 80.5 percent of communities in Iowa's metropolitan areas are considered affordable using the standard measure of less than 30 percent of income spent on housing. When transportation costs are added in, 40.5 percent of communities are considered affordable using the CNT's Housing + Transportation measure of less than 45 percent of income spent on both housing and transportation. In comparison, 69 percent of communities in the United States spend less than 30 percent of income on housing, and 39 percent of communities spend less than 45 percent on housing and transportation.

**Figure 2.10** shows the percentage of communities in Iowa's metropolitan areas and metropolitan areas in the six states surrounding Iowa (Illinois, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin) that are considered affordable when calculating the cost of housing and transportation as a percent of income. As shown, housing in Iowa is more affordable by this measure than any of the other

states evaluated. This is also shown in the median list price for a home in Iowa, which according to the online real estate database, Zillow, was \$134,900 in April 2011. In comparison, this value was \$184,900 nationally, and in the six states surrounding Iowa, the average median list price for a home was \$155,400.

When factoring in the combined costs of housing and transportation, which considers the relationship between car ownership, car usage, and transit usage with several independent neighborhood and household variables, Iowa’s affordability shrinks by nearly half. However, Iowa’s affordable percentage is comparable to neighboring states and is still higher than the United States average.

**Figure 2.10: Percentage of Metropolitan Areas that are Considered Affordable in Housing and Transportation**



**Source: Center for Neighborhood Technology, Housing + Transportation Affordability Index, 2010**

Iowa’s slow and steady employment growth, changing employment sectors, and relatively low cost of living all impact how the state’s transportation infrastructure is used. Maintaining an accessible, reliable, and well-connected transportation system is an important factor in attracting and retaining employers, while Iowa’s affordable housing and low cost of living appeals to workers. Additionally, as the health care and services employment sectors continue to grow faster than other employment sectors in Iowa, there will be changing demands on urban and rural transportation infrastructure to accommodate these businesses.

## 2.3 Passenger trends

### Iowans are traveling more, but passenger travel is not uniform across all modes of transportation.

Since 1990, travel across all passenger modes (aviation, highway, passenger rail, and public transit) has increased by about 16 percent (see [Table 2.1](#)). However, growth in passenger travel in the past 20 years has not been uniform. Highway passenger vehicle miles traveled (VMT) and aviation enplanements grew the most between 1990 and 2000, while public transit and passenger rail had the most significant increases in passenger travel between 2000 and 2010. If passenger travel trends from the past decade continue, public transit and passenger rail ridership will continue to grow, highway VMT will remain steady or slowly increase, and aviation enplanements may slightly decrease. It should be noted that passenger travel trends are influenced in part by the cost of fuel, and fluctuations in these costs can create some uncertainty in forecasting future travel trends. [Figure 2.11](#) shows the passenger transportation trends for each mode from 1990 to 2010.

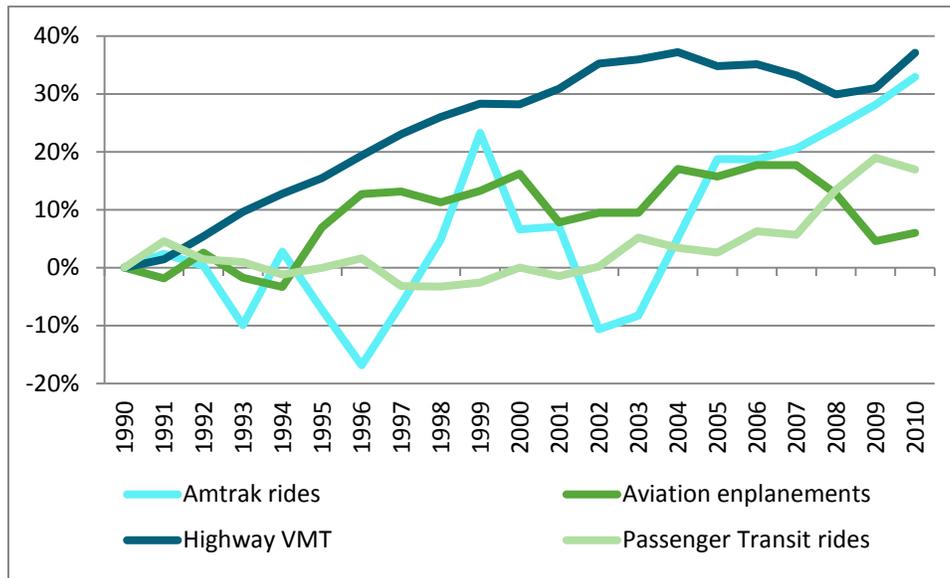
**Table 2.1:** Iowa Passenger Transportation Trends, 1990-2010

	1990	2000	2010
<b>Amtrak rides</b>	51,719	55,146	68,744
<b>Aviation enplanements</b>	1,385,684	1,610,292	1,469,143
<b>Highway vehicle miles traveled (VMT)</b>	20,323,000,000	26,048,000,000	27,859,000,000
<b>Transit rides</b>	22,417,065	22,423,693	26,209,999

Source: Iowa DOT (Note: Highway VMT includes include automobiles, pickup trucks, and motorcycles)



Figure 2.11: Percent Change in Travel by Mode Since 1990

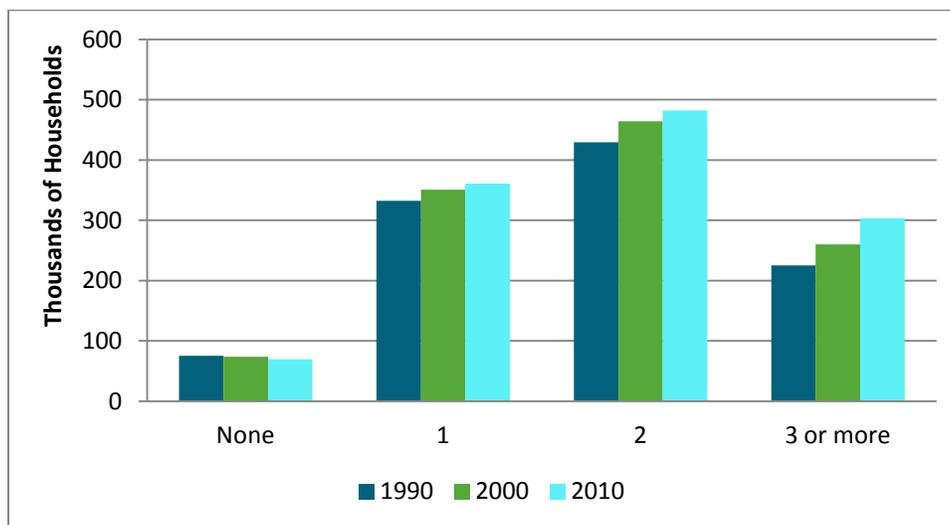


Source: Iowa DOT (Note: Highway VMT includes automobiles, pickup trucks, and motorcycles)

The number of vehicles per household has increased.

Since 1990, the number of households with three or more vehicles has increased by 35 percent, while the number of households without any vehicles decreased eight percent. However, as in 1990, the majority of households still have one or two vehicles. Figure 2.12 illustrates the increase in vehicles per household from 1990 to 2010.

Figure 2.2: Number of Vehicles Available per Household in Iowa, 1990-2010



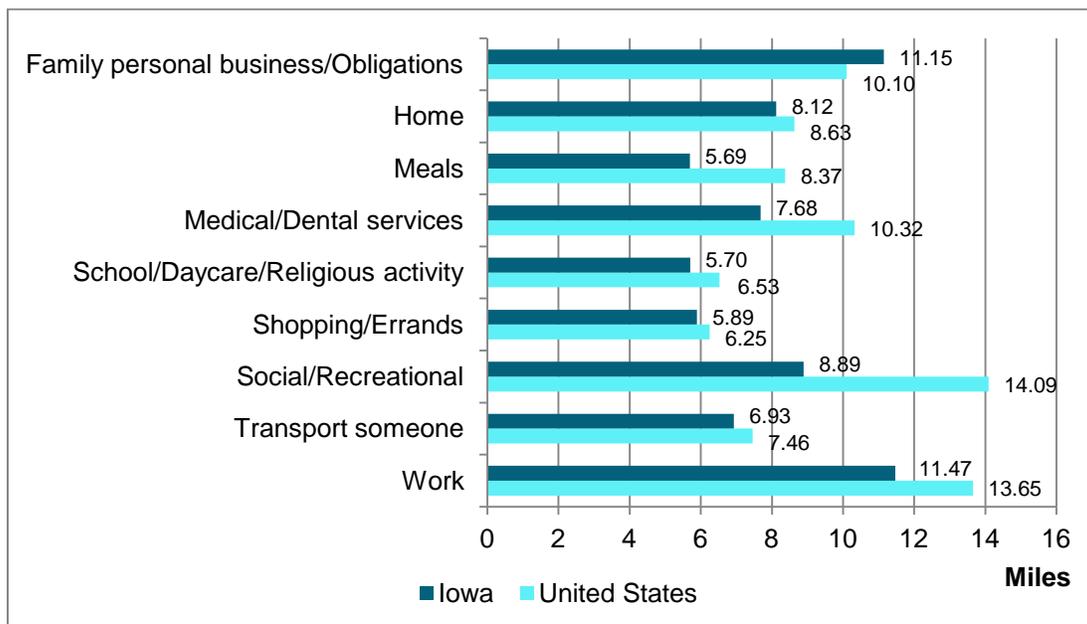
Sources: U.S. Census Bureau, 2006-2010 American Community Survey 5-Year Estimates

### Iowa's average trip length is shorter than the national average.

According to the National Household Travel Survey, Iowa's average trip length in 2009 was about 15 percent shorter than the national average. Of the trip purposes measured, Iowans traveled the greatest distance to work, at 11.47 miles on average, while the shortest average trip length was for meals, at 5.69 miles. The only surveyed destination for which Iowans traveled further than the national average was for family personal business/obligations trips, where the average distance was 11.15 miles in Iowa and 10.10 miles nationally. Lastly, the greatest percent difference between average trip lengths in Iowa and the United States were for social and recreational purposes, where Iowa trips were nearly 37% shorter than the national average.

Iowa's shorter average trip length suggests that residents are in closer proximity than the national average to many destinations, such as medical and dental services, school, daycare, shopping and errands, and more. **Figure 2.13** shows the average trip length by purpose in Iowa and the United States.

**Figure 2.13: Average trip length by purpose, Iowa and the United States, 2009**



Source: U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey

### Most Iowans drive to work alone.

In 2010, 78.7 percent of workers commuted to work by driving alone, 10.3 percent of Iowans carpooled to work, 3.8 percent walked, and 1.1 percent took public transportation. Additionally, 1.3 percent of the working population took an "other" mode of transportation to work, and 4.8 percent of Iowans worked

from home. These trends remained largely the same between 2000 and 2010 with the exception of those traveling by an “other” mode, which saw a 42 percent increase in the past decade. However, between 1980 and 2010, the percentage of workers driving to work alone increased 27 percent, while carpooling decreased 44 percent, and walking to work decreased 56 percent. **Table 2.2** shows how lowans got to work from 1980 to 2010.

**Table 2.2: How lowans Got to Work, 1980-2010**

	1980	1990	2000	2010
<b>Drove alone</b>	62.1%	73.4%	78.6%	78.7%
<b>Carpooled</b>	18.4%	11.9%	10.8%	10.3%
<b>Public transportation</b>	1.9%	1.2%	1.0%	1.1%
<b>Walked</b>	8.6%	5.8%	4.0%	3.8%
<b>Other (incl. bicycle, motorcycle, taxi)</b>	1.6%	0.9%	0.9%	1.3%
<b>Worked at home</b>	7.3%	6.7%	4.7%	4.8%

Sources: U.S. Census Bureau, 2006-2010 American Community Survey 5-Year Estimates

**Average travel time to work has increased, but lowans still have one of the lowest average commute times nationally.**

Average travel time to work for lowans has slowly increased over the past two decades, and this trend will likely continue. Since 1990, the percentage of workers commuting 30 minutes or more to work has increased from 16 to 19 percent, while the percentage of workers commuting less than 15 minutes has decreased from 51 percent in 1990 to 45 percent in 2010.

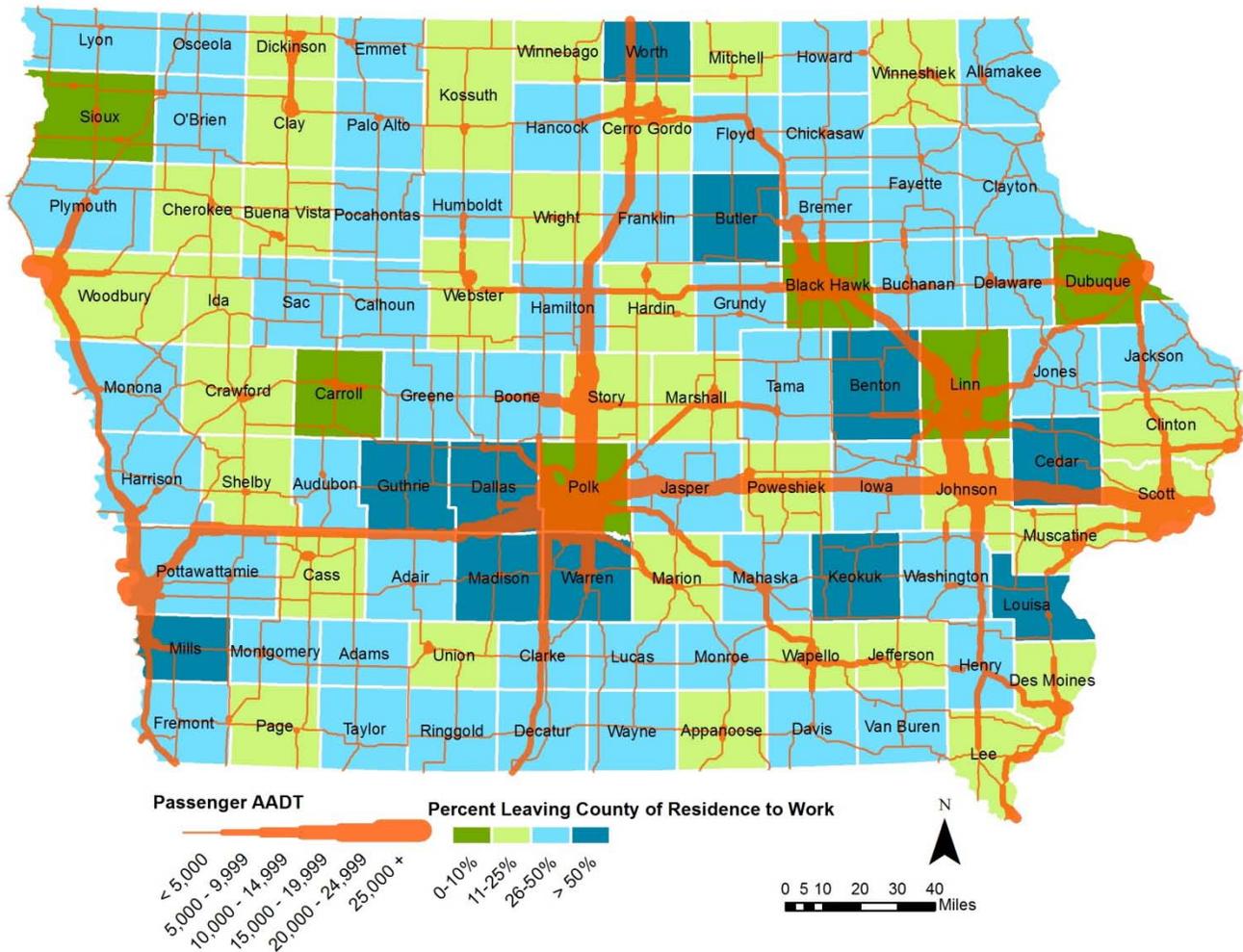
More lowans are commuting to locations outside their county of residence which can often result in increased travel times to work. In 1990, about 17 percent of workers commuted to a job outside their county of residence, while in 2010, this number was about 22 percent. Additionally, there were 11 counties in Iowa where over 50 percent of residents traveled to jobs outside their home county in 2010, compared to only two counties in 1990. **Figure 2.14** illustrates some potential commuter routes, highlighting the passenger vehicle Average Annual Daily Traffic (AADT) on primary highways, compared with the percentage of the workforce leaving their county of residence to go to work.

With jobs moving more and more to the metropolitan areas in Iowa, commuting has taken on more of a role to support the labor force to these metro areas. The influence of a metropolitan area is no longer just the major core city but includes the surrounding counties as well.

There is still a significant portion of the population that desires to live at the fringe of metropolitan areas, in smaller communities, or in a non-metropolitan environment. These workers value the lifestyle and quality of life benefits associated with their residence location and are willing to commute to jobs located elsewhere.

Despite these changes, Iowans still enjoy the seventh-shortest average commute time in the United States. The average travel time to work for Iowans is 18.5 minutes, compared to an average of 25.2 minutes nationally.

**Figure 2.143: Commuting Trends: Passenger Average Annual Daily Traffic (AADT) on Primary Highways, and Percent of Workforce Leaving County of Residence to Work, 2010**



Sources: U.S. Census Bureau, 2006-2010 American Community Survey 5-Year Estimates; Iowa DOT (Note: passenger vehicles include automobiles, pickup trucks, and motorcycles)

## 2.4 Freight trends

The last two federal transportation reauthorization acts encouraged states and metropolitan planning organizations to consider freight movements in their overall planning process. The purpose is to bring attention to freight movement issues affecting transportation infrastructure and economic development. The State of Iowa is part of an enormous economy that demands the efficient movement of freight. There is a growing need for adequate infrastructure to move freight safely, securely, and efficiently. Like other states, freight in Iowa is moved a number of ways. The majority of freight is moved by truck and rail, both of which have experienced steady growth over the past two decades.

Iowa's freight is also moved via air and water. Further, over the past 20 years, air cargo movements have remained stable as trucking has been integrated into delivery systems. Although air cargo represents only a small portion of total freight movement, total ton-miles have doubled since the

1980s. Iowa's two major waterways, the Mississippi and Missouri rivers, move primarily grain and other bulk commodities to and from Iowa and provide access to the extensive network of inland waterways in the U.S. Located along these rivers are 60 barge terminals, which transfer bulk commodities between barge, rail, and truck.

A majority of the movements by air, rail, and water are intermodal. These movements usually begin or end with a truck movement. These intermodal connections are critical to Iowa's competitive edge in the marketplace. [Table 2.3](#) identifies locations where roadway connectors provide access between major intermodal facilities and the National Highway System.

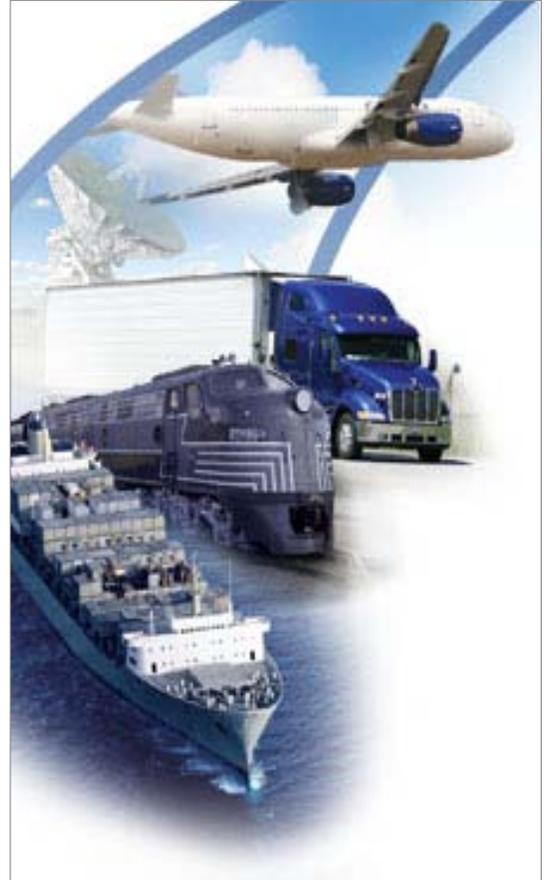


Table 2.3: Iowa Intermodal Connectors

Facility	Type	Connector	Connector Ownership
AGRI Grain Marketing, McGregor	Port Terminal	IA 76, B St between Terminal and US 18	State
Amoco Pipeline Distribution Center, Council Bluffs	Truck/Pipeline Terminal	US 275 (eastern ramp termini I-29 to South Expressway), North to WB ramp terminus of I-29/80.	State
Big Soo Terminal, Sioux City	Port Terminal	Harbor Dr & Industrial Rd between Terminal and I-29	Local
Continental Grain Co., Dubuque	Port Terminal	Kerper Blvd, E 16th St, E 11th St, E 9th St, 9th-11th W Conn, between Terminal and US 61/151	Local
Des Moines International Airport	Airport	Fleur Dr between ML King Blvd and relocated IA 5	Local
Des Moines International Airport	Airport	Park Ave (63rd to Fleur Dr)	Local
Determann Industries, Camanche	Port Terminal	Washington Blvd, US 67 between Terminal and US 30	State
Harvest States Peavey, Davenport	Port Terminal	IA 22 between Terminal and I-280	State
Harvest States Peavey, Dubuque	Port Terminal	E 7th St, Central Ave and White St between Terminal and Commercial	Local
Quad Cities Container Terminal, Davenport	Truck/Rail Facility	S Rolff St, Rockingham Rd (IA 22), between Terminal and I-280	Local
The Eastern Iowa Airport, Cedar Rapids	Airport	Wright Brothers Blvd between I-380 and Cherry Valley Rd	Local
Vandalia Rd Pipeline, Des Moines	Truck/Pipeline Terminal	E. 30th St/Vandalia Rd (IA 163 to US 65)	Local
Williams Pipeline Co., Sioux City	Truck/Pipeline Terminal	41st St & 46th St & Business US 75 (Lewis Blvd) Between Terminal and US 75	State

Source: Intermodal Connector Assessment Tool (ICAT), FHWA

### Iowa freight will increase but will not be uniform across all modes.

In 2009, there were over 450 million tons of freight moved within the state of Iowa. This number is projected to increase 53 percent, totaling almost 700 million tons by the year 2040. It has also been estimated that freight shipments crossing state lines account for nearly 75 percent of all freight ton-miles in Iowa, which is why it is so important to consider Iowa's transportation infrastructure as part of a regional and national network for moving freight. **Table 2.4** shows the freight tonnage moved within Iowa in 2009 by mode, and the projected freight tonnage in 2040.

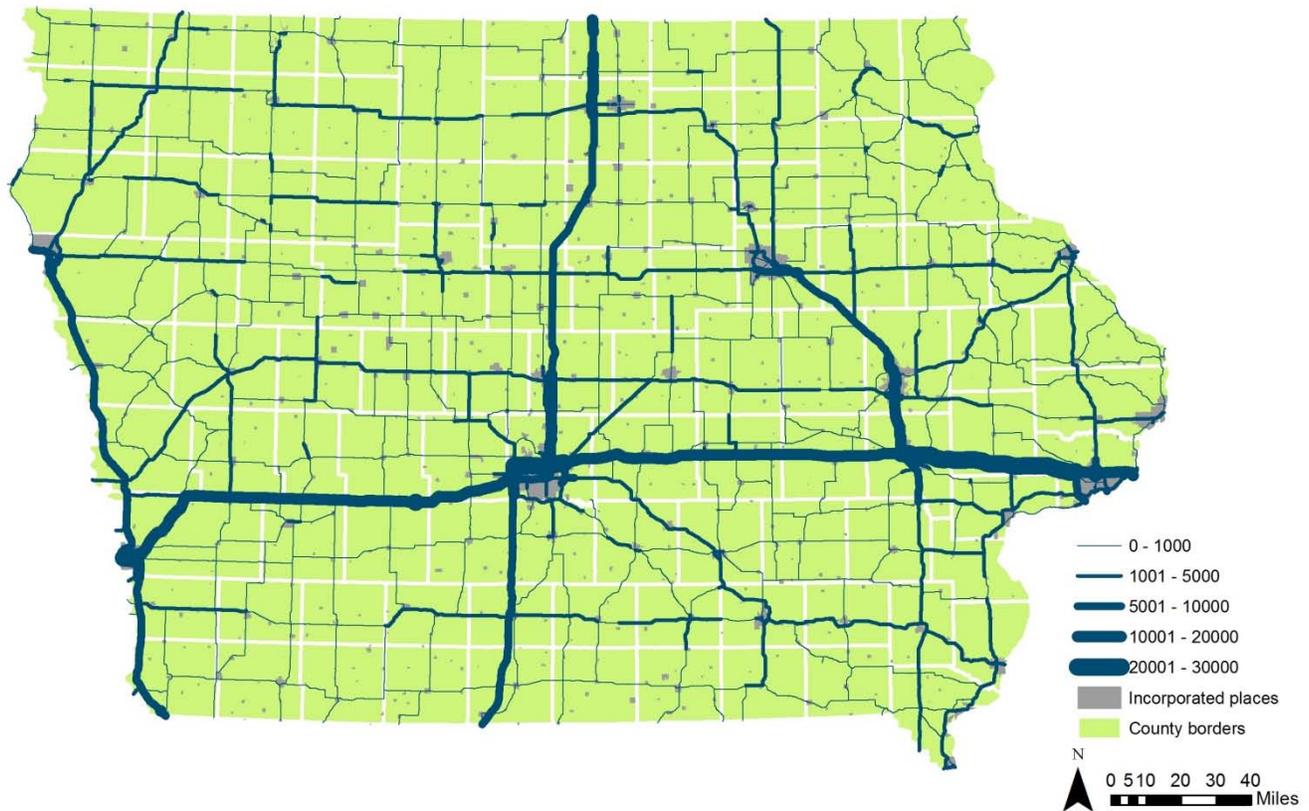
**Table 2.4: Iowa Freight Flows, 2009 vs. 2040 (millions of tons)**

	2009	2040	Percent change
Truck	367.1	574.9	57%
Rail	57.9	83.0	43%
Water	10.9	15.9	46%
Air (including air-truck)	0.01	0.1	900%
Multiple modes and Mail	11.7	14.7	25%
Pipeline	6.2	6.3	2%
Other	1.4	2.3	62%
<b>Total</b>	<b>455.4</b>	<b>697.5</b>	<b>53%</b>

Source: 2009 Freight Analysis Framework, FHWA

### The majority of freight in Iowa is moved by truck.

With few exceptions, nearly all freight moves by truck at some point to its final destination. There are over 6,900 trucking companies operating in Iowa, and Interstate 80 and Interstate 35 are the two major transcontinental truck routes that account for a significant amount of freight moving through the state. As shown in **Figure 2.15**, the heaviest Average Annual Daily Truck Traffic (AADTT) in 2010 occurred on the eastern portion of I-80 between Scott and Johnson Counties and also on I-80 in the Des Moines metro area. Both areas experienced between 20,001-30,000 AADTT, and it is estimated that these numbers will increase by 2040. In an effort to reduce trips and increase efficiency for Iowa farmers and businesses, weight limitations on trucks were recently relaxed. According to Iowa law, six- and seven-axle trucks can now up to 90,000 and 96,000 pounds respectively on State and Federal Non-Interstate Primary Highways.

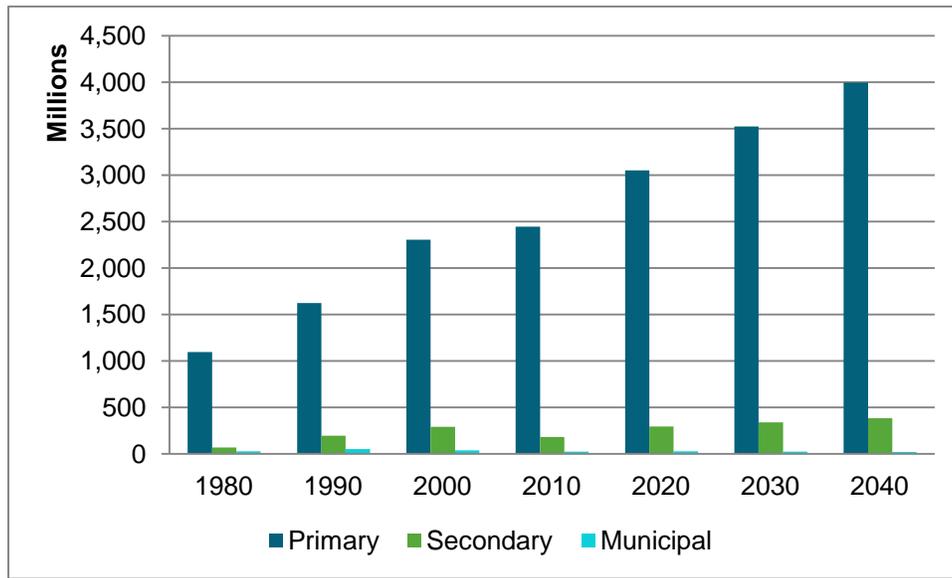
**Figure 2.15:** Large Truck AADTT on the Primary Highway System, 2010

Source: Iowa DOT

### Iowa freight movements will continue to increase on certain highway corridors, primarily the National Highway System.

Large truck traffic on Iowa's highways will continue to increase in the future. Freight movement by truck in Iowa is heavily concentrated on the Interstate and Commercial and Industrial Network (CIN), which comprise the National Highway System (NHS). This system, which includes 782 miles of interstate highways and 2,422 miles of other primary highways, carried 85 percent of Iowa's large truck traffic (combination units) in 2010. **Figure 2.16** shows the growth in large truck vehicle miles traveled (VMT) by jurisdiction from 1980 to 2010, and projected to 2040. Over the past 30 years, large truck traffic on Iowa's primary roads showed an increase of 123 percent with the highest truck activity on I-80 in eastern Iowa. During this same period, truck traffic on secondary roads also increased substantially, while truck traffic on municipal roads has remained relatively stable. If these trends continue, large truck traffic will grow approximately 66 percent between now and 2040, which will certainly impact Iowa's highways through increased congestion and deteriorating pavement conditions.

Figure 2.16: Large Truck VMT by Jurisdiction, 1980-2040



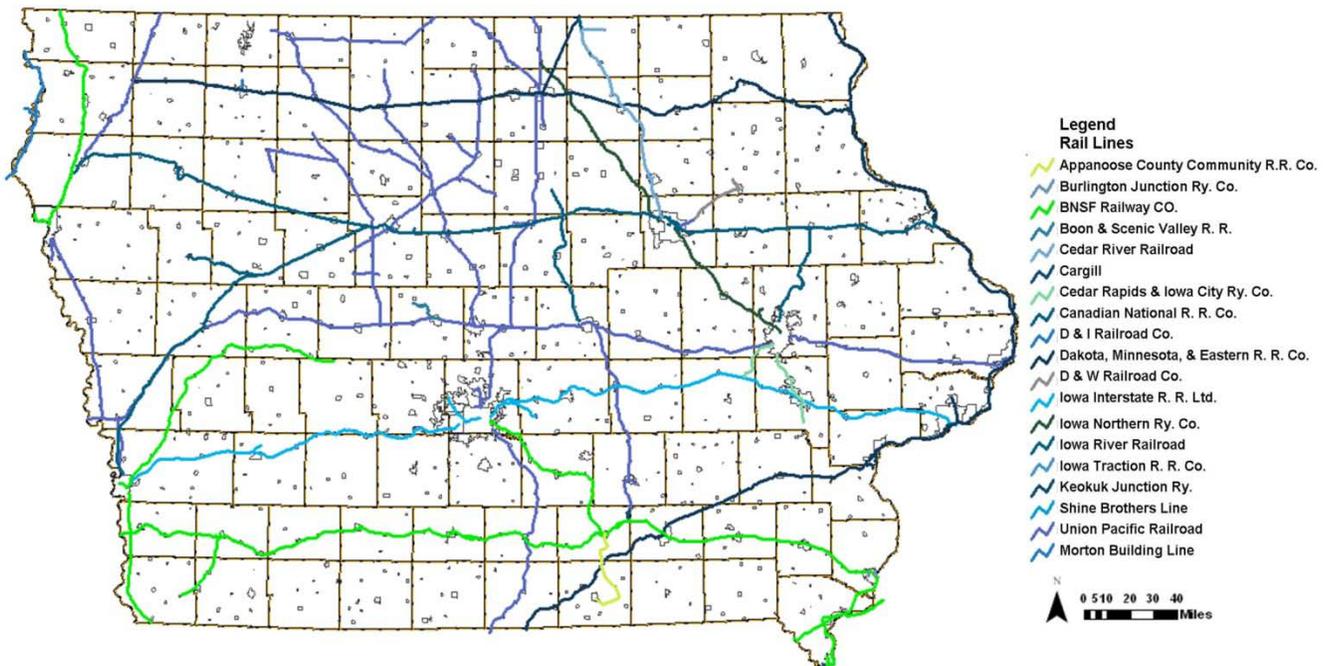
Source: Iowa DOT

**Increasing amounts of freight will continue to move through Iowa via rail mainlines.**

In 2009, 370 million tons of freight were moved by rail, indicating that, like highway, Iowa’s rail system is also critical to the movement of freight between Iowa and the rest of the nation. Iowa’s rail lines support regional and transcontinental freight movement. In Iowa, 3,945 miles of rail freight track are operated and served by 18 railroad companies. Five of these rail carriers are major national companies that operate 59 percent of Iowa’s total route miles. Railroads serve 90 out of 99 counties in Iowa and nearly half of Iowa’s 947 cities. Iowa’s current rail services are shown in [Figure 2.17](#).



Figure 2.17: 2010 Iowa Railroad Service Map

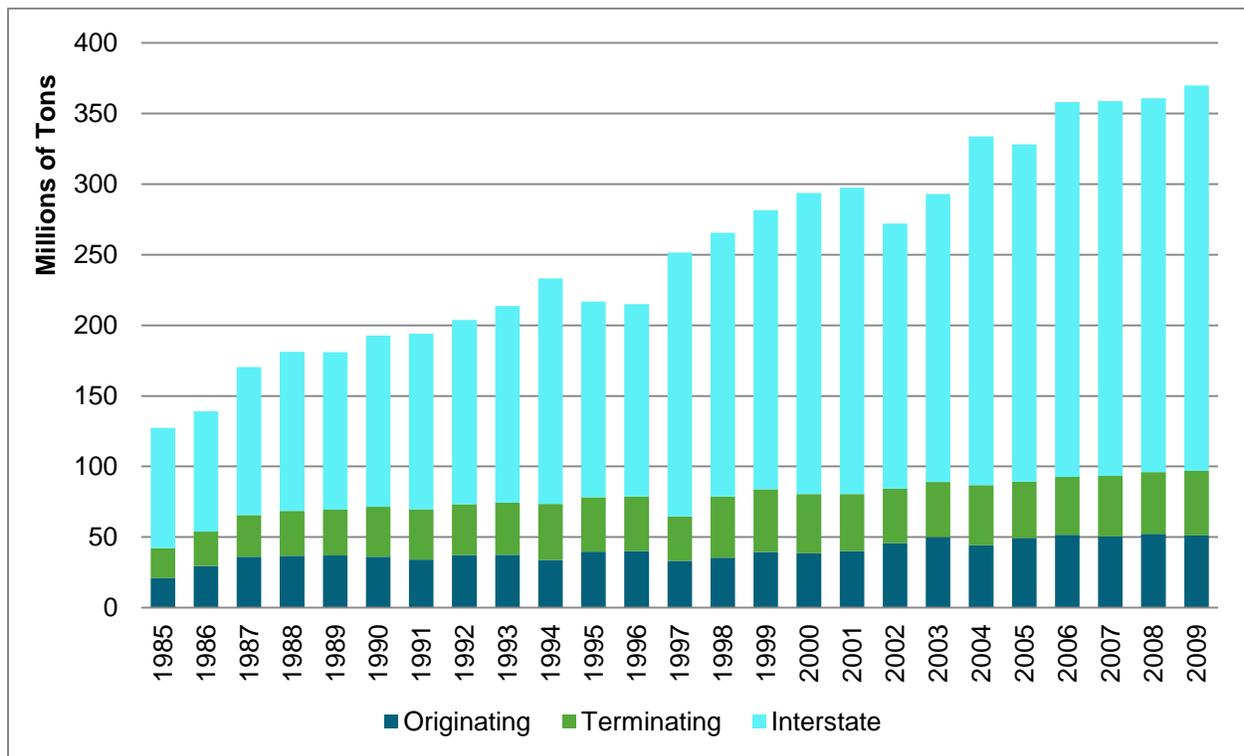


Source: Iowa DOT

Between 1985 and 2009, traffic volumes increased by 121 percent in rail car-miles and 189 percent in net rail ton-miles. Some Iowa rail lines, particularly the east-west mainlines, have experienced and will continue to experience dramatic increases in freight traffic through 2040. For the communities that these lines pass through, this means increases in railroad-related impacts such as traffic congestion, blocked crossings, noise, air pollution emissions, and delays in emergency response.

Although trucking holds a considerably higher share of freight originations, terminations, and intrastate traffic, the bulk of rail freight movements in Iowa have involved interstate (pass-through) traffic over the past 20 years, primarily resulting from economic shifts in the railroad industry. Iowa is an important linking state for the Union Pacific (UP) and the BNSF Railway lines. It is important to keep the railroad capacity at an adequate level for originating, terminating, and interstate railroad traffic. Figure 2.18 shows the movements of freight by rail in Iowa from 1990 to 2009.

Figure 2.18: Iowa Rail Movements, 1985-2009



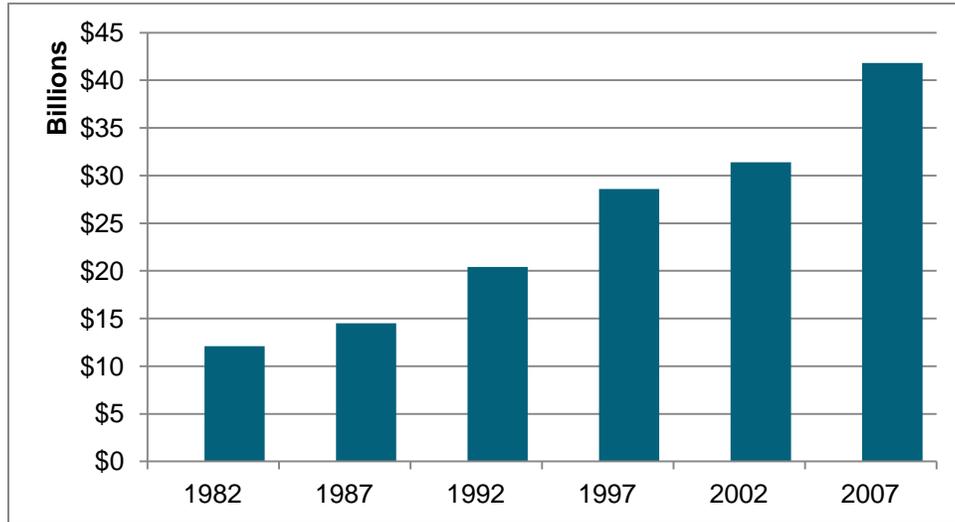
Sources: 2009 Iowa Railroad System Plan, Iowa DOT

**As value-added production increases in Iowa, freight movements will also increase.**

Iowa continues to be a leader in such areas as food production and processing, ethanol and bio-diesel production, and livestock production. These industries are very dependent on transportation with more movements being involved in the “adding of value” throughout the production process. The demand for value-added production will continue to grow and will depend on a reliable transportation system.

Adding value to a product, such as a manufacturing or agricultural product, increases the consumer appeal and economic value of that commodity. For example, rather than shipping raw agricultural products such as corn out of Iowa, that corn can be converted to ethanol before it leaves the state. By-products of that process such as dry distiller’s grain can be utilized as feed for cattle, resulting in further value to the product. As shown in Figure 2.19, these processes have resulted in billions of dollars of value added to manufacturing in Iowa, and can also result in more freight movements within the state.

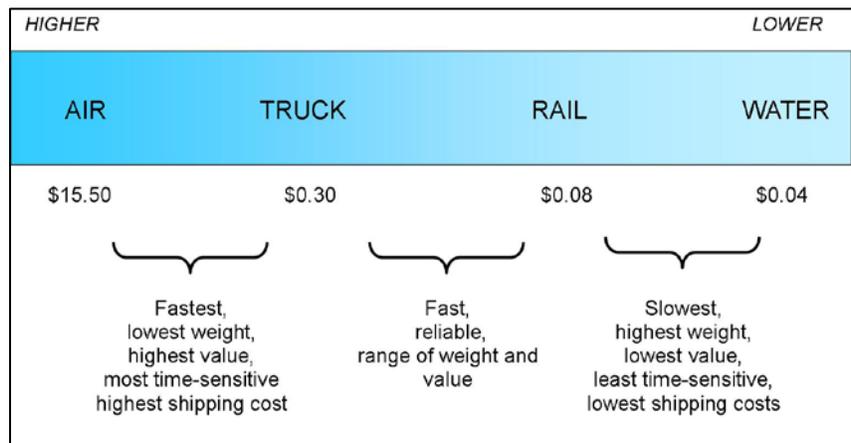
Figure 2.19: Value Added to All Manufacturing in Iowa, 1982-2007



Source: U.S. Census Bureau, Economic Census

Figure 2.20 shows the per-pound value of freight moved in Iowa by mode for total freight movements (originating, terminating, intrastate, and interstate). The value of freight per pound is substantially higher for air, which is also the fastest way to ship. Air handles the most time-sensitive cargo and has the highest shipping costs. Truck and rail carry much lower values per pound and handle higher weights at lower shipping costs. The lowest value per pound is handled by water, which is also the slowest mode with the lowest shipping cost. These comparisons help explain which mode can handle a certain type of commodity most efficiently.

Figure 2.20: Iowa Freight Comparisons



Source: 2007 Commodity Flow Survey (Bureau of Transportation Statistics)

**Iowa exports to other states and other countries will continue to increase.**

Domestic exports originating and terminating in Iowa are increasing and are projected to continue to do so through 2040 (see **Tables 2.5 and 2.6**).

**Table 2.5: Exports Originating in Iowa, 2009 vs. 2040**

	2009	2040	Percent Change
<b>Millions of Tons</b>	104.5	107.5	2.9%
<b>Billions of Dollars</b>	\$97.6	\$103.8	6.4%

Source: 2009 Freight Analysis Framework, FHWA

**Table 2.6: Exports Terminating in Iowa, 2009 vs. 2040**

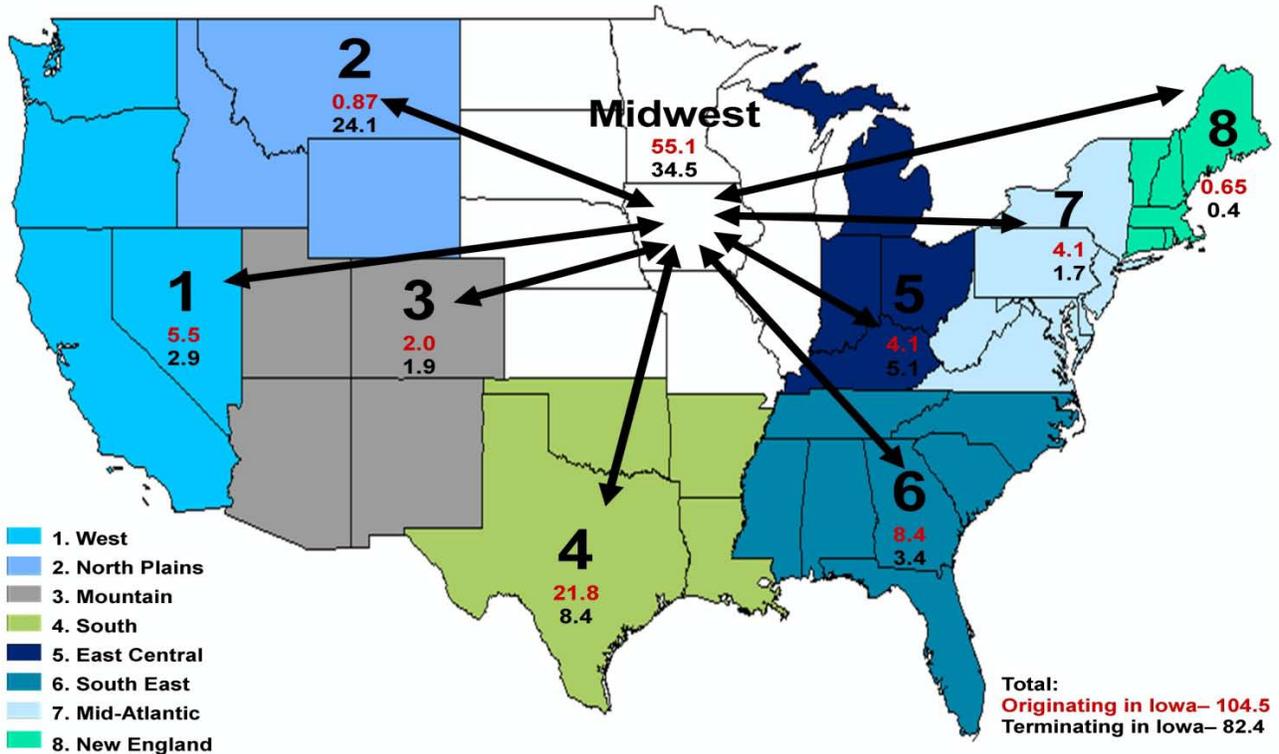
	2009	2040	Percent Change
<b>Millions of Tons</b>	82.4	166.2	101.7%
<b>Billions of Dollars</b>	\$88.0	\$289.8	229.3%

Source: 2009 Freight Analysis Framework, FHWA

In 2009, about 53 percent (55.1 million tons) of the freight tonnage leaving Iowa for other parts of the U.S. goes to states in the Midwest, while 42 percent (34.5 million tons) of the freight tonnage coming into Iowa is from the Midwestern states.

The South – region 4 in **Figure 2.21** – receives the second highest outbound freight tonnage from Iowa (21.8 million tons). The second highest amount of inbound freight (24.1 million tons) comes to Iowa from the North Plains – region 2 in **Figure 2.21**. A large amount of this tonnage is commodities such as coal coming from Wyoming.

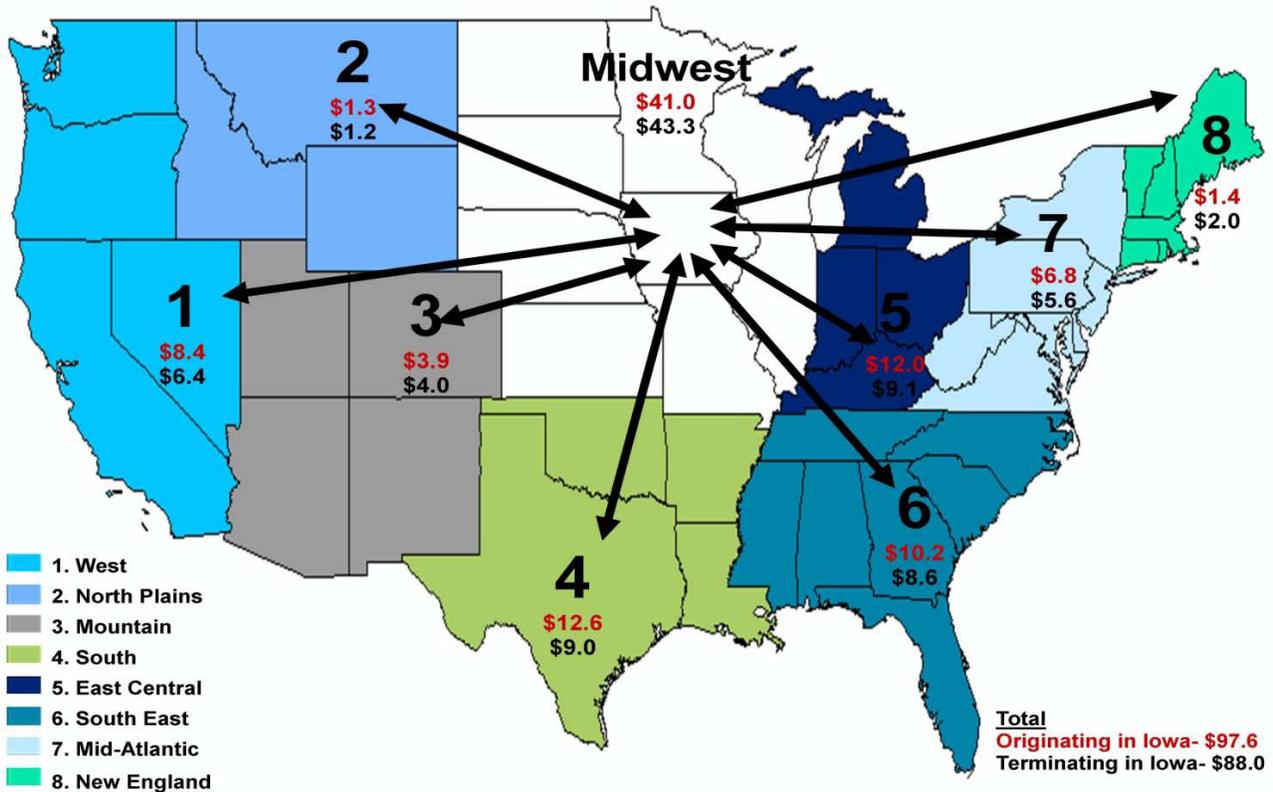
Figure 2.21: Iowa Freight Tonnage, 2009 (millions of tons)



Source: 2009 Freight Analysis Framework, FHWA

About 42 percent (\$41 billion) of the freight value leaving Iowa for other parts of the U.S. goes to states in the Midwest, while 49 percent (\$43.3 billion) of the freight value coming into Iowa is from the Midwestern states. The South – region 4 in Figure 2.22 – receives the second highest outbound value of freight from Iowa (\$12.6 billion). This is attributable to the high value of agricultural products leaving Iowa for these states. The second highest amount of the value of inbound freight (\$9.1 billion) comes to Iowa from the East Central region – region 5 in Figure 2.22. This can be attributed to industrial products such as motor vehicles, textiles, machinery, plastics, and electronics coming from the states of Indiana, Kentucky, Michigan, and Ohio. Iowa's neighboring states are the largest customers for both tons of freight and value of freight for both inbound and outbound movements. These numbers reinforce the importance of coordinating our infrastructure needs for major corridors with our surrounding states.

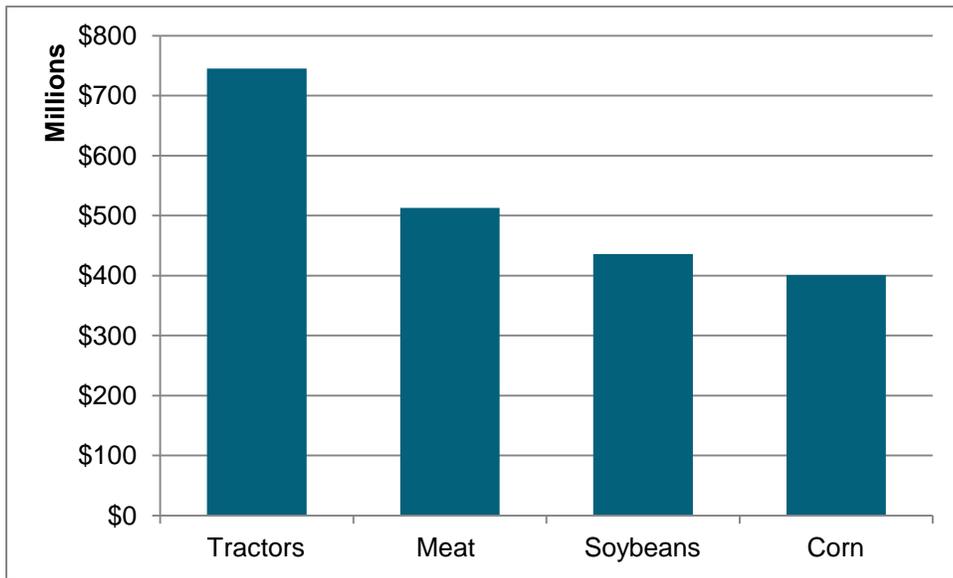
Figure 2.22: Iowa Freight Values, 2009 (billions of dollars)



Source: 2009 Freight Analysis Framework, FHWA

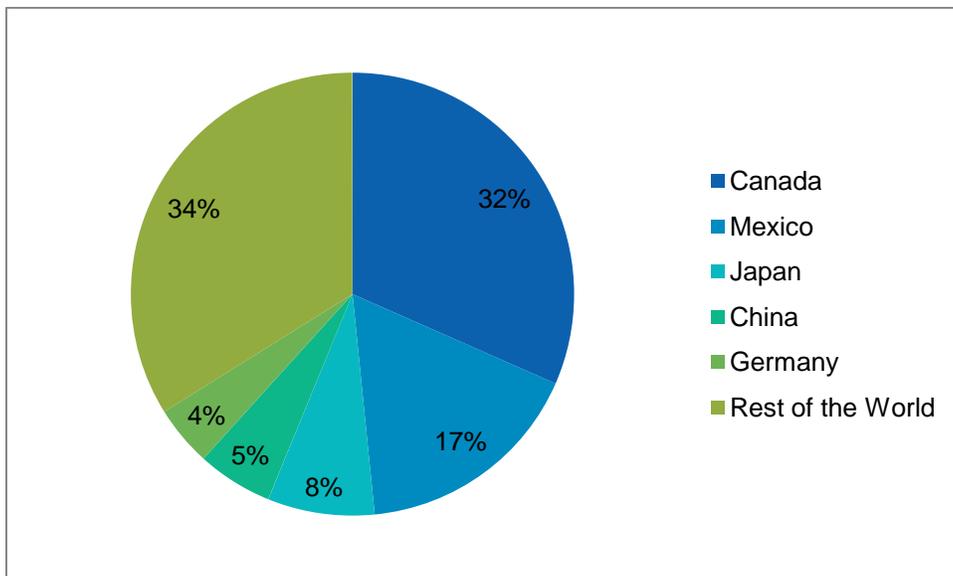
Iowa exports to other countries also continue to increase each year. In 1999, Iowa exported \$4.1 billion in goods to other countries, which increased to \$10.8 billion in 2010. The top exports from Iowa in 2010 included, tractors, soybeans, meat, and corn. Iowa’s top five trading partners are Canada, Mexico, Japan, China, and Germany. Iowa’s top exports and top international export markets are shown in Figures 2.23 and 2.24.

Figure 2.23: Iowa's Top International Exports, 2010



Source: U.S. Census Bureau

Figure 2.24: Top Iowa International Export Markets, 2010



Source: U.S. Census Bureau

## 2.5 Implications for transportation

### Demographic trends

- Increased population in and around metropolitan areas will create congestion and capacity issues.
- Local jurisdictions with decreasing population will experience additional strain on already tight road budgets.
- Improving the roadway and driving environment and expanding transportation options are necessary to help meet the mobility needs of older drivers.
- It is important that all Iowans, including minority, low-income, and disabled populations, have access to employment and services in both metropolitan and non-metropolitan areas.

### Economic trends

- Maintaining an accessible, reliable, and well-connected transportation system is an important factor in attracting and retaining employers.
- There will be changing demands on urban and rural transportation infrastructure to accommodate growing employment sectors.

### Passenger trends

- As population and vehicle ownership increase, there will be more travel on Iowa's roadway system.
- With more Iowans driving farther to work, it will be increasingly important to identify and maintain commuter routes.
- While the personal automobile is the primary mode of choice, investments are still necessary for aviation, bicycle and pedestrian facilities, public transit, and passenger rail to ensure mobility options for Iowans.

### Freight trends

- Growing demand for freight increases concerns about its safety, energy consumption, and environmental impacts.
- With freight projected to increase, the effects of congestion on freight mobility, reliability, and costs will need to be taken into consideration.
- Globalization and growth in both national and international trade are placing more demands on our freight system.

- With value-added production and overall economic activity increasing in Iowa, freight movements will increase.
- Reducing delays and maintaining the state's freight system are key priorities.
- With weight limitations on trucks being relaxed in recent years, the impacts to infrastructure and operations need to be taken into consideration.